

Pre Calculus Honors

Unit 2 Rational and Polynomial Functions Test Preparation - DUE _____

You should already have a personal study guide covering the following topics from 2.1 - 2.6:

- How do I factor trinomials in the form $ax^2 + bx + c$?
- How do I factor trinomials in the form $ax^2 + bx + c$ using the grouping method?
- How do I factor special patterns? (Difference of squares, Difference of cubes, Sum of cubes)
- How do I tell if a function is a polynomial?
- How do I sketch a graph of a polynomial?
- How do I write a possible factored form equation given a graph? How do I apply that to different situations (such as a table?)
- How do I multiply out a factored form equation into standard form?
- Key vocabulary - polynomial, root, zero, multiplicity, end behavior, leading coefficient, turning points
- *Extra (from last year that you are still expected to know)*
 - Do I still know how to I graph quadratics, find the vertex and axis of symmetry, write the exact equation from a graph, etc or should I review that as well?
- Can I divide two polynomials using either synthetic or long division when appropriate?
- Given a graph, a zero, OR a factor of a high-degree polynomial, can I use division and factoring to completely factor the original equation?
- Can I generate a list of possible factors and use that to factor a polynomial completely? Do I know the quadratic formula?
- Can I create a polynomial of n-th degree given certain conditions for zeros or function values?

1. To prepare for your test **add content to your previous personal study guide**. Use the guiding questions below to pull out important topics from 2.7 - 2.10 (Rational Function Lessons)

- Can I simplify rational expressions with addition, subtraction, multiplication, or division?
- Can I solve rational equations and identify extraneous solutions?
- Can I graph rational equations by first finding:
 - Vertical Asymptotes or Holes
 - Horizontal Asymptotes or Slant Asymptotes
 - x-intercepts and y-intercepts
 - Domain in interval notation
 - Table of values to sketch the general shape
- Can I write the equation of a rational function given certain restraints or a graph?

2. **Complete at least three questions from each section** on the back of this study guide.

3. **Review** your quizzes, homework, classwork practice, warm-ups, and Polynomial test. Practice specifically with the problems you missed!

Your study guide (3 points) and the practice problems (2 points) are homework grades.

Your test is on Tuesday, November 17. You are welcome to attend a tutorial (any afternoon but Thursday) or stop by during lunch (any day but Tuesday) with specific questions or areas to review. Please let Mrs. Pike know in advance that you are coming!

2.1-2.6 | See previous study guide and test

2.7 \div 2.8

Simplify the following rational expressions.

1. $\frac{x^2 + 4x - 21}{x^2 - 9x + 18}$

2. $\frac{\frac{x^2 + 7x}{3x}}{\frac{49 - x^2}{3x - 21}}$

3. $\frac{(a+b)\left(\frac{1}{a} - \frac{1}{b}\right)}{(a-b)\left(\frac{1}{a} + \frac{1}{b}\right)}$

4. $\frac{\left(\frac{p}{p-4} - \frac{1}{4}\right)}{\left(\frac{9}{4p} + \frac{p^2}{p-4}\right)}$

5.

$\frac{2x}{x-1} + \frac{1}{x-3} = \frac{2}{x^2 - 4x + 3}$

6.

$\frac{x-3}{x} + \frac{3}{x+2} + \frac{6}{x^2 + 2x} = 0$

2.9

Find the important pieces and graph (VA/Holes, HA/Slant, all intercepts, domain).

1. $f(x) = -\frac{3}{x-1}$

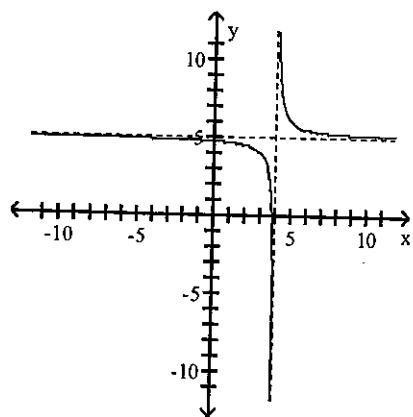
2. $g(x) = \frac{5-2x}{x+4}$

3. $h(x) = \frac{2x^2 - 2}{x^2 - 4}$

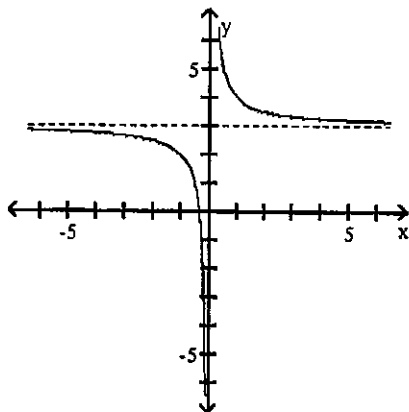
4. $i(x) = \frac{x^3}{x^2 - 9}$

5. $j(x) = \frac{x^2 - 16}{x+4}$

2.10 Write a possible function (factored form) for each graph.



2.



3.

